# A NEW SPECIES OF *CICADETTA* AMYOT (HEMIPTERA: CICADIDAE) FROM QUEENSLAND, WITH NOTES ON ITS CALLING SONG

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## Abstract

*Cicadetta polita* sp. n. is described from the Edungalba, Theodore, Taroom and Glenmorgan districts in southern Queensland. It belongs to a little known species complex distributed throughout inland Queensland. Known adult food plants include weeping myall (*Acacia pendula*) and false sandalwood (*Eremophila mitchellii*). An analysis is given of the moderately fast ticking song, specific to this taxon.

## Introduction

A new species of cicada collected in southern Queensland shows broad similarities to some other Australian species currently placed in the genus *Cicadetta* Amyot and it is on this basis that generic placement has been made. Characteristics include a similar body shape (both sexes) and similar genital structures in males. Moulds (1988) discussed the status of *Cicadetta* in Australia and a generic review of the Australian cicada fauna is currently in preparation (Moulds, in prep.).

The new species comprises part of an undescribed species complex that is quite distinct from other members of the genus; however, as the remaining members of this complex are not particularly well known at present, only one species is documented here. Another representative of the complex, referred to as *Cicadetta* sp. H, is illustrated in Popple and Strange (2002).

The type series is located in the following collections: QM – Queensland Museum, Brisbane; LWP – L. W. Popple, Brisbane; AE – A. Ewart, Caloundra; MSM – M. S. Moulds – Sydney; JTM – J. T. St. Leger Moss, Capalaba.

## *Cicadetta polita* sp. n.

(Figs 1-2)

*Cicadetta* sp. G; Popple and Strange, 2002.

*Types. Holotype* ♂, QUEENSLAND: Myall Park, 6 km N Glenmorgan, SEQ, 27-28.xii.2001, L. Popple, A. Strange (in Queensland Museum, Reg. no. T 108573). *Paratypes*. 1 ♂, 25°36'S 149°46'E, 6 km N Taroom, 3.iii.1998, C.J. Burwell, S.G. Evans; 1 ♀, 2 km W Glenmorgan, 29.xii.2001, L. Popple, A. Strange (both QM); 3 ♂♂, 3 ♀♀, 2 km W Glenmorgan, 29.xii.2001, L. Popple, A. Strange; (LWP); 3 ♂♂, Brigalow Res. Stn nr Theodore, nr dump, *E. mitchellii*, 19.xii.2000, A. E[wart], 24°49.47'S 149°48.04'E; 2 ♂♂, 2 ♀♀, Brigalow Res. Stn nr Theodore, nr lake, *E[remophila] mitchellii*, 19.xii.2000, A. E[wart], 24°49.42'S 149°47.97'E; 1 ♀, Brigalow Res. Stn nr Theodore,. E. brigalow section, 19.xii.2000, A. E[wart], 24°48.85'S 149°47.48'E; 3 ♂♂, 1 ♀ (damaged), Brigalow Res. Stn nr Theodore, nr

lake, *E. mitchellii*, 20.xii.2000, A. E[wart], 24°49.42'S 149°47.97'E; 1 ♂, 1 ♀, 2 km W Glenmorgan, 29.xii.2001, L. Popple, A. Strange (all AE); 3 ♀♀, 3 km E of Mourangee Hsd, nr Edungalba, 20.xi.1986, E.E. Adams; 1 ♂, 1 ♀, 3 km E of Mourangee Hsd, 5.ii.1983, mainly on sandlewood, E.E. Adams; 8 ♀♀, "Mourangee", nr Edungalba, 5.ii.1983, 18.xii.1983 & 14.xii.1985, on sandlewood, E.E. Adams (all MSM);1 ♂, 1 ♀, 2 km W Glenmorgan, 29.xii.2001, L. Popple, A. Strange (JTM).

*Description of male* (Fig. 1A). Head largely black; postclypeus shiny, barred black, becoming pale brown towards lateral and posterior margins; black along midline; anteclypeus shiny black, with a pale brown spot immediately posterior to the postclypeus; rostrum medium brown anteriorly, extending into black, pale brown at the apex. Dorsal surface of head shiny black, with pink to red ocelli. Eyes medium-light to dark brown or reddish brown. Antennae black, paler towards the apex; antennal lobes pale.


**Fig. 1.** *Cicadetta polita*. (A) male; (B) female. Approximately 2.4 x life size.

Thorax with pronotum mainly shiny black; prescutum medium brown surrounding midline; midline fascia pale brown to orange, not reaching pronotal collar; pronotal collar pale brown to orange, with colouration extending dorsolaterally either side of midline fascia in the form of two 'wedges'. Mesonotum shiny black with inconspicuous dark brown dorso-lateral and lateral fascia; cruciform elevation and fore wing basal membranes orange-brown. Legs with coxae pale brown with prominent dark brown longitudinal fasciae; femora pale brown with extensive dark brown longitudinal fasciae, pale brown at base and apex; tibiae pale toward base and apex, otherwise medium brown, spines dark brown; tarsi brown, becoming darker brown towards apex of claws.

Wings with forewing costal veins pale brown, becoming darker distally from the node; basal membranes bright orange with a contrasting dark brown spot at the base of the clavus; veins CuA, CuP and the base of M pale brown; all other veins medium brown to dark brown; veins CuA and M fused posterior to apex of basal cell; basal cell noticeably obscured by a thickened CuA vein; with eight apical cells (7 if aberrant). Hindwing with base of vein 1A and much of 2A pale brown; other veins medium brown; plaga pale brown to cream with medium brown median longitudinal fasciae; with six apical cells.

Tymbals (Fig. 2E) with five distinct tymbal ridges present, with three inter-ridge sclerites; dorsal ridge and adjacent ridge comparatively short, not separated by an inter-ridge sclerite, with a separate anterior ridge area; the lower 2-3 ridges joined anteriorly; basal spur present. Opercula (Fig. 2F) follows body axis and broadly sickle-shaped; yellow-brown, becoming darker at anterior of flange; inwardly rounded termination.

Abdomen (Fig 2A) with tergite 2 shiny black, becoming medium brown towards posterior; tergites 3-8 shiny black anteriorly, medium brown distally, with a contrasting orange-brown posterior margin; sometimes with silver pubescence laterally. Sternite 2 orange-brown with dark brown medial fascia that broadens posteriorly; sternites 3 to 6 with prominent dark brown fascia that becomes orange-brown towards anterior and posterior lateral margins; sternite 7 brown to orange-brown, with broad dark brown medial fascia terminating anteriorly; sternite 8 brown, with silver pubescence.

Genitalia (Figs 2B-D). Pygophore rich to pale brown, with darker lobes having a rounded anterior-dorsal termination; uncal lobes prominent, deeply bifurcate and directed ventrally, giving a 'fanged' appearance. Aedeagus trifid with a dark brown anterior-dorsal ridge, prominent dorsal pseudoparameres extending beyond endotheca and ventral pseudoparamere slightly shorter than endotheca; dorsal pseudoparameres dark brown at base, becoming lighter anteriorly and dorsally, transparent at apex; ventral pseudoparamere near black, transparent at apex; endotheca cylindrical and fleshy, pale brown to transparent, becoming darker brown ventrally; gonocoxite IX dark to medium brown with two distinct anterior spurs.

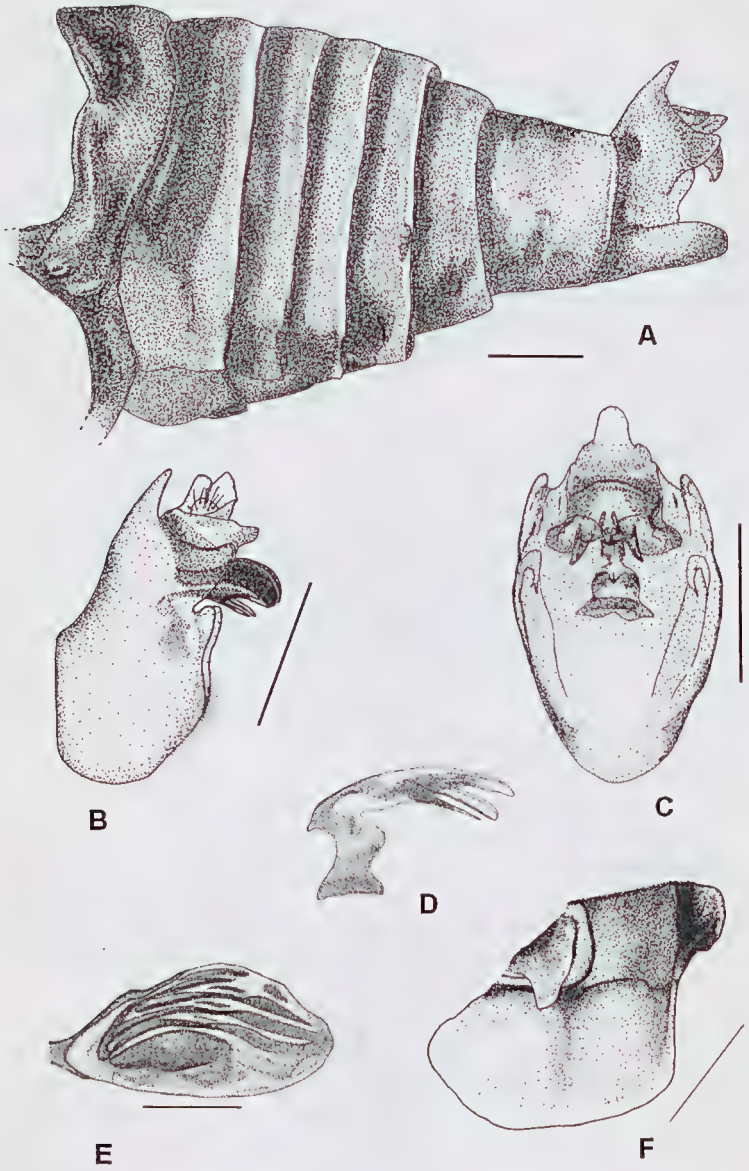


**Fig. 2.** *Cicadetta polita* male. (A) abdomen, viewed from left; (B) pygophore, viewed laterally from left; (C) pygophore, viewed from posterior ventral side; (D) aedeagus, lateral view of left side; (E) right tymbal; (F) left opercula. Scales = 1 mm.

*Female* (Fig. 1B). Markings and coloration similar to male. Abdominal segment 9 medium brown, becoming orange-brown towards posterior and ventral region surrounding ovipositor sheath, with a pair of dark brown to shiny black longitudinal dorsolateral fasciae that terminate short of apex; apex dark brown and narrowed sharply into a spine; ovipositor sheath does not extend noticeably beyond termination of abdomen.

*Measurements* (in mm; range with mean in parentheses: 5 males, 5 females). Body length: male 14.3-14.9 (14.48); female 14.6-16.9 (16.32). Forewing length: male 18.8-19.5 (19.18); female 20.4-22.0 (21.26). Head width: male 4.9-5.0 (4.94); female 5.1-5.3 (5.14). Pronotum width: male 4.3-4.6 (4.44); female 4.6-4.8 (4.68). Abdomen width: male 4.5-4.7 (4.64); female 4.7-4.9 (4.78).

*Etymology*. *Polita* is the feminine derivative of the Latin *politus*, meaning polished, smooth, refined. This refers to the shiny, polished appearance of the insect.

*Comments*. *C. polita* can be distinguished from all previously described members of the genus *Cicadetta* by the following two features on the wings: a thickened CuA vein near the base, causing the basal cell to become obscured; and a prominent, dark spot at the base of the clavus. Two undescribed species that are closely related to *C. polita*, both in calling song type and morphology, have been documented under the names *Notopsalta* sp. B (Ewart 1988, 1998, Ewart and Popple 2000, Popple and Strange 2002) and *Cicadetta* sp. H (Popple and Strange 2002). *C. polita* can be distinguished from *Notopsalta* sp. B by the features listed above. *Cicadetta* sp. H has an obscured basal cell and thickened CuA vein like *C. polita*, but lacks the dark spot at the base of the clavus.

**Distribution and habitat**

Known from localities in the Glenmorgan district near Surat, from 6 km north of Taroom, the DPI Brigalow Research Station near Theodore and the Edungalba district in southern inland Queensland (Fig. 3). In the southern part of its range the preferred adult food plants are weeping myall (*Acacia pendula*) and false sandalwood (*Eremophila mitchellii*), especially where both species occur near riverbeds. Adults have a tendency to sit on the inner and outer branches where they are not particularly mobile, but will take flight if disturbed (Popple and Strange 2002). Near Theodore, almost all specimens were collected from *E. mitchellii* (A. Ewart, pers. comm.).

**Calling song**

Calling songs were recorded on a Sony MZR700 Minidisk recorder with a digital Sony EC957 Electret Condenser Microphone at the Glenmorgan site (LWP) and on a Sony WM-D6C cassette recorder at Brigalow Research Station, Theodore site (A. Ewart). Oscillograms were generated using Cool Edit and all calling songs were digitised at a 44.1 kHz sampling rate.

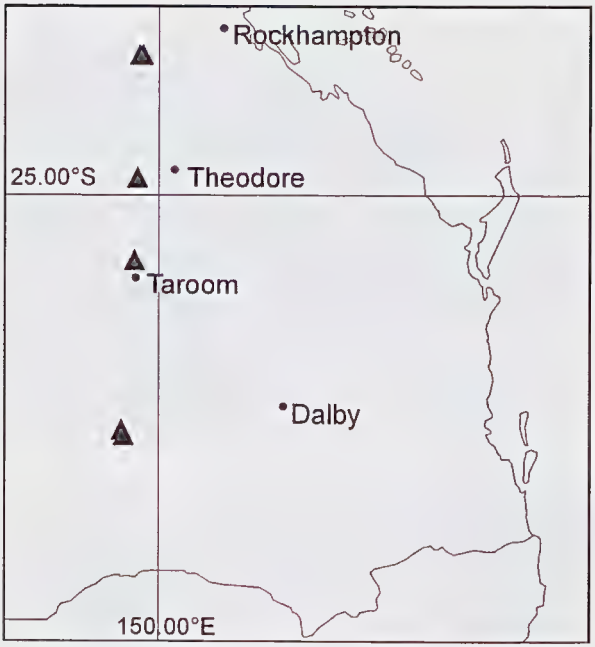


**Fig. 3.** Distribution of *Cicadetta polita*: localities where specimens in the type series were collected (▲).

Song structure terminology follows Ragge and Reynolds (1998). The song consists of two distinct phases (Fig. 4). Phase one (Figs 4A, 4C) consists of monotonously repeated single phrases or echemes. Each echeme lasts for approx. 0.05 s and there is a distinct 0.20-0.27 s period of silence between each. The second phase (Figs 4B, 4D) is similar, but emitted at a much faster rate. The echemes themselves are not shorter (approx. 0.04-0.06 s), but the gap between echemes is greatly reduced to about equal the length of an individual echeme (0.04-0.06 s). The song usually commences with the first phase, but may alternate freely between the two phases during each song burst. Sequences of each song phase may last for longer than 60 s, depending on the weather conditions and the number of males calling.

The frequency range of the song from the recording at Myall Park, Glenmorgan showed a broad-banded peak from 13-19 kHz with a further superficial peak at 9-10 kHz. The specimen recorded near Theodore had a similar broad peak spanning from 11-17 kHz. The two recordings showed similarities in the extent of the dominant frequencies. Differences may have been attributed to differences in recording equipment and/or processing software.

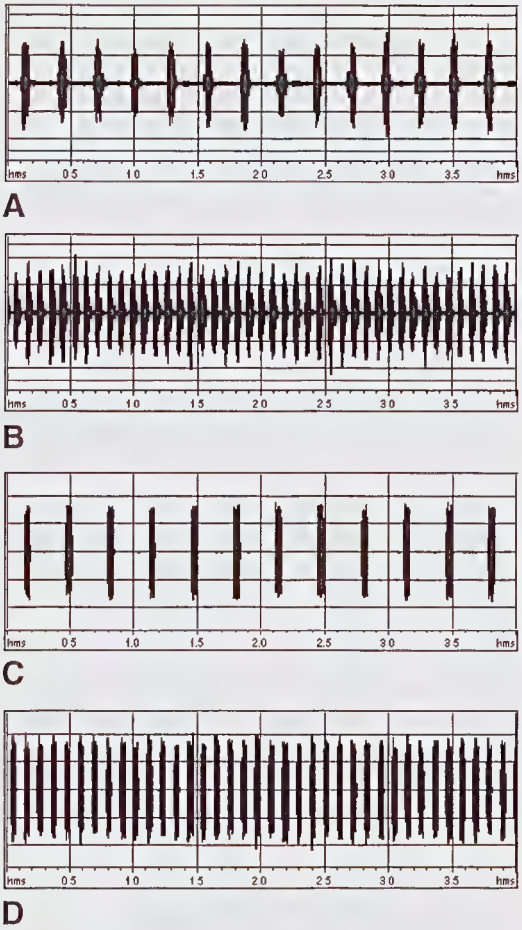


**Fig. 4.** Calling song of *Cicadetta polita*. (A) phase one of song recorded at Myall Park, Glenmorgan; (B) phase two of song at same location; (C) phase one of song recorded at Brigalow Research Station (A. Ewart); (D) phase two of song at same location (A. Ewart). Each segment has a duration of 4 seconds.

Males sing most vigorously when there is sufficient sunlight during the morning and late afternoon, avoiding the heat in the middle of the day. In overcast weather, singing is sporadic and may occur at any time of day. Singing males have been seen to aggregate in the presence of females.

*Notopsalta* sp. B has a similar song to *C. polita*, with similar repetitive phrases; however, the echemes themselves are much longer (0.18-0.22 s) and are sporadically interspersed with a short phrase (0.06-0.08 s) followed by a long phrase (0.32-0.34 s) comprising four coupled echemes. The song is

illustrated in Ewart (1988). The dominant frequency range extends from 14-15 kHz (Ewart and Popple 2000).

The calling song of *Cicadetta* sp. H shows a similar broad-band frequency range to *C. polita*. However, the structure of the two songs is entirely different. *Cicadetta* sp. H. produces regular phrases that consist of a closely emitted group of echemes; its song is illustrated in Popple and Strange (2002).

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